

What Is Claimed Is:

1. Apparatus for depositing radioactive seeds into a patient's prostate in the vicinity of a patient's bladder, the apparatus comprising:

5 an elongated needle having first and second conductive traces, proximal and distal ends, and a lumen extending therebetween, the lumen adapted to accept a column of radioactive seeds and spacers, each of the first and second conductive traces having a tip  
10 region disposed at the distal end; and  
circuitry coupled to the tip regions of the first and second conductive traces for detecting whether the distal end of the elongated needle projects into the patient's bladder.

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2. The apparatus of claim 1 wherein the elongated needle is removably coupled to a reusable handle, and the circuitry is disposed within the handle.

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3. The apparatus of claim 2 wherein the circuitry further comprises circuitry for measuring a value indicative of an impedance of tissue disposed between the tip regions of the first and second conductive traces.

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4. The apparatus of claim 3 further comprising an indicator that displays a metric corresponding to a sensed value of tissue impedance.

5. The apparatus of claim 4 wherein  
30 indicator comprises a light meter.

6. The apparatus of claim 1 further comprising a electrically insulating material disposed between the first and second conductive traces.

7. The apparatus of claim 6 wherein the  
5 electrically insulating material comprises a layer of electrically non-conductive material disposed on an outer surface of the needle, and the first and second conductive traces are disposed on the layer.

8. The apparatus of claim 1 further  
10 comprising a plunger disposed within the lumen to deposit the column of radioactive seeds and spacers within the prostate.

9. The apparatus of claim 1 wherein the  
15 first and second conductive traces comprise metallic films.

10. The apparatus of claim 9 wherein the metallic films comprise a material selected from a group consisting of copper, nickel, and a composite of teflon and silver.

20 11. A method for depositing radioactive seeds into a patient's prostate in the vicinity of the patient's bladder, the method comprising:

providing a device comprising a needle having proximal and distal ends, and a lumen extending  
25 therebetween and adapted to accept a column of radioactive seeds and spacers, and means for detecting whether the distal end of the needle projects into the patient's bladder;

inserting the needle through the patient's prostate until the means for detecting indicates that the distal end is disposed in the bladder;

withdrawing the needle proximally until the  
5 means for detecting indicates that the distal end is no longer disposed in the bladder; and

operating the needle to deposit the column of radioactive seeds and spacers into the patient's prostate.

10           12. The method of claim 11 wherein the device further comprises a single-use needle and a reusable handle, the method further comprising removably coupling the needle to the handle.

13. The method of claim 11 wherein the means  
15 for detecting comprises circuitry for measuring tissue impedance, the method further comprising continuously measuring tissue impedance during the steps of inserting the needle and withdrawing the needle.

14. The method of claim 13 wherein the means  
20 for detecting comprises a light meter, the method further comprising illuminating the light meter responsive to the measured impedance.

15. The method of claim 11 wherein the device further comprises a plunger disposed within the  
25 lumen in contact with a proximal end of the column of radioactive seeds and spacers, and operating the needle comprises maintaining the plunger stationary while retracting the needle proximally.

16. A method for treating prostate cancer comprising:

providing a needle having a lumen, proximal and distal ends, first and second conductive traces,  
5 and means for detecting a tissue boundary coupled to the first and second conductive traces;

inserting the needle into a patient's prostate;

measuring an impedance of tissue disposed  
10 between the first and second conductive traces using the means for detecting a tissue boundary;

monitoring the impedance measured by the means for detecting a tissue boundary to determine when the distal end penetrates a boundary between the  
15 patient's prostate and an adjacent mucosa of the patient; and

withdrawing the needle from the mucosa so that the distal end is disposed fully within the patient's prostate.

20 17. Apparatus for treating prostate cancer, the apparatus comprising:

an elongated needle having a lumen, proximal and distal ends, first and second conductive traces;  
and

25 means for detecting a tissue boundary coupled to the first and second conductive traces.

18. The apparatus of claim 17 wherein the elongated needle is removably coupled to a reusable handle, and the means for detecting a tissue boundary  
30 is disposed within the handle.

19. The apparatus of claim 17 further comprising an indicator that displays a metric corresponding to a sensed value of tissue impedance.

20. The apparatus of claim 19 wherein the an  
5 indicator comprises a light meter.

21. The apparatus of claim 17 further comprising an indicator that displays a metric corresponding to a sensed value of tissue impedance.